

Nature centers in New York State

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Introduction

Nature centers provide an informal education to the public about wildlife, ecology, and the environment (Figure 8). They can be a building in a park or be part of an organization (Figure 9). Nature centers help the community uphold the values of environmental connection, leisure provision, community resilience, and civic engagement by allowing visitors to participate in environmental and educational efforts (Browning et al., 2017). They provide teachers with teaching materials from the real world and provide hands-on science activities for students (Jung & Tonso, 2006).

The purpose of this project is to create a comprehensive list of nature centers and their information and analyze spatial relationships about nature centers in New York State. Some judgement is necessary to define a nature center. In this project, the included nature centers are nature centers in parks, nature preserves that have environmental education programs and exhibits and visitor centers of museums that serve the purpose of a nature center with environmental education and displays. Plots of land that may have been called nature centers were excluded if there were no buildings, educational displays, environmental education programs, or interpretation centers. The study area of this project is New York state, which is located in the northeastern United States and has several cities as well as natural areas located throughout the state.

Data and Methods

The GIS software used for this project was QGIS (QGIS Development Team, 2018). The data recorded in this project was obtained from several sources. One such source was a “State Nature Centers” dataset (New York State Office of Parks, Recreation and Historic Preservation, 2013). All of the nature centers listed on this original data set were included, even if extra information on the center including the name could not be found. Other lists of nature centers used as data sources for this project were found on the New York State Parks, Recreation and Historic Preservation website (New York State Office of Parks, Recreation and Historic Preservation, n. d) and on Wikipedia (Wikipedia, 2016). Coordinates were obtained from the nature center or park websites or from Google Maps (Google, 2020). Additional information, such as the year nature centers were founded were obtained from nature center websites listed in the attribute table.

Several basic steps were taken to create and analyze GIS layers about nature centers in New York State. First, a spreadsheet was created that holds information about nature centers. For each nature center, data was included in the spreadsheet about the name of the nature center, the park in which it is located, the county in which it is located, its website, the owner of the nature center, the year a nature center was founded and its latitude and longitudes coordinates, as well as information about any outside sources of data. Next, the spreadsheet was added to GIS software as a delimited text layer. A counties layer which includes information on county areas and populations was also added (NYS Office of Information Technology Services GIS Program Office, 2020).

Maps were produced about the location of nature centers, the year in which they were founded, and their owner types. Then, a layer was created which included the number of nature center points in each county polygon. Maps were produced showing the number of nature centers per county, the number of nature centers per 100,000 county residents, and the number of nature centers per hundred square miles in New York State Counties. A graph of the number of nature centers founded each decade was made in Excel (Microsoft Corporation 2020).

Results

Analysis of the location of nature centers in New York State shows that nature centers are distributed unevenly throughout the state (Figure 1). A major cluster of nature centers exists in the New York City region, while there are fewer nature centers in the northeastern part of the state (Figure 1).

Analysis of the year nature centers were founded shows the spatial patterns of when nature centers appeared in New York (Figure 2). Very few nature centers were founded before 1935, then between 1935 and 1975 nature centers started to appear across New York State, especially Central New York and the Hudson Valley region and since 1975, even more nature centers have appeared all throughout the state, especially in areas such as Long Island and Western New York (Figure 2). There has been an increase in new nature centers since the 1970s, perhaps related to an increase in environmental awareness and the creation of Earth Day (Figure 7).

Nature centers have a large variety of owners. Non-profit owned nature centers and State Park nature centers appear all across the state (Figure 3). Clusters of nature centers with the same owner type are also present, including a cluster of New York City Park nature centers in the city and a cluster of county owned nature centers in Westchester county (Figure 3).

An analysis of the number of nature centers per county shows that nature centers are not distributed evenly across New York State (Figure 4). Counties in the New York City and Long Island region in particular have more nature centers than many of the counties in Central New York and the Adirondack region (Figure 4).

The number of nature centers per hundred square miles in New York counties shows that counties in the New York and Long Island area have a higher number of nature centers per unit area than the rest of the state (Figure 5).

Analysis of the number of nature centers per 100,000 county residents shows a few counties across the state with high numbers of nature centers per 100,000 residents (Figure 6). Others, including counties in New York City, Long Island, and all across the state have relatively few nature centers for their number of residents (Figure 6).

Discussion and Conclusion

Clusters of nature centers appear in counties that have more people rather than large areas of wilderness (Figure 6). Therefore, many of those counties with high amounts of nature centers, have a higher number of nature centers per unit area (Figure 7).

Counties with the most nature centers overall also have the fewest nature centers per 100,000 residents (Figure 8). This implies that even if there are more nature centers in an area, there still may not be very many for the number of residents and those have to provide environmental education and interpretation services for a higher number of people compared to nature centers in other locations.

Across the state, nature centers have many different owner types and years that they were created (Figures 4&5). The newest nature centers, appearing after the late 1900s, seem to be founded in areas with the fewest nature centers per unit population. This implies that public demand for environmental education may be growing. Where there are fewer nature centers for the amount of residents, there may not be enough nature centers to satisfy public demand.

Moving forward, this study could be important for the organizations that own nature centers as it points out areas that have fewer nature centers per unit of population or area, which may have a higher demand for nature centers to be built in the future. This study could also be important for the public as it allows people to find nature centers near them which best fits their needs in terms of the age, owner, and resources.

Analysis

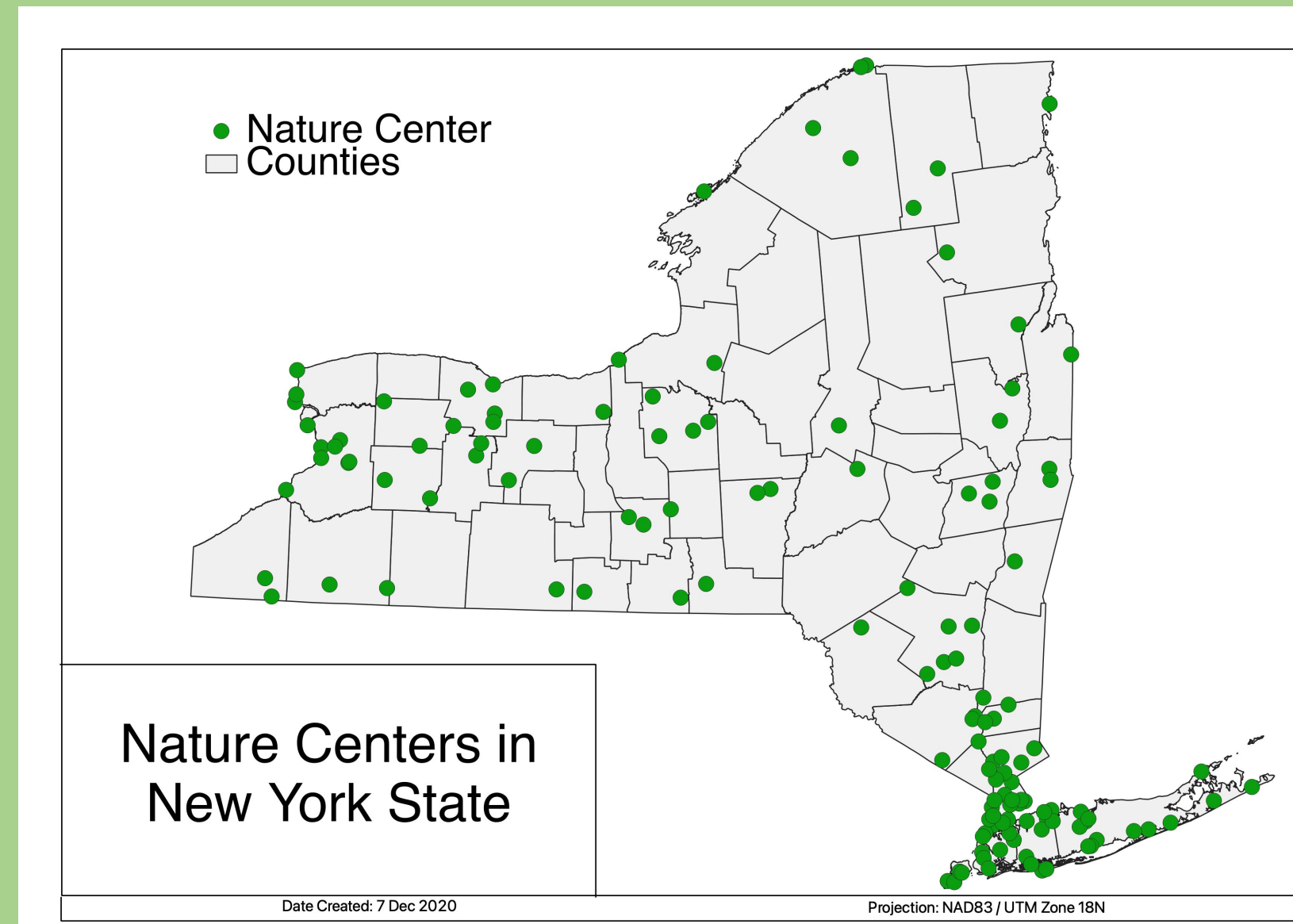


Figure 1. The location of nature centers in New York State.

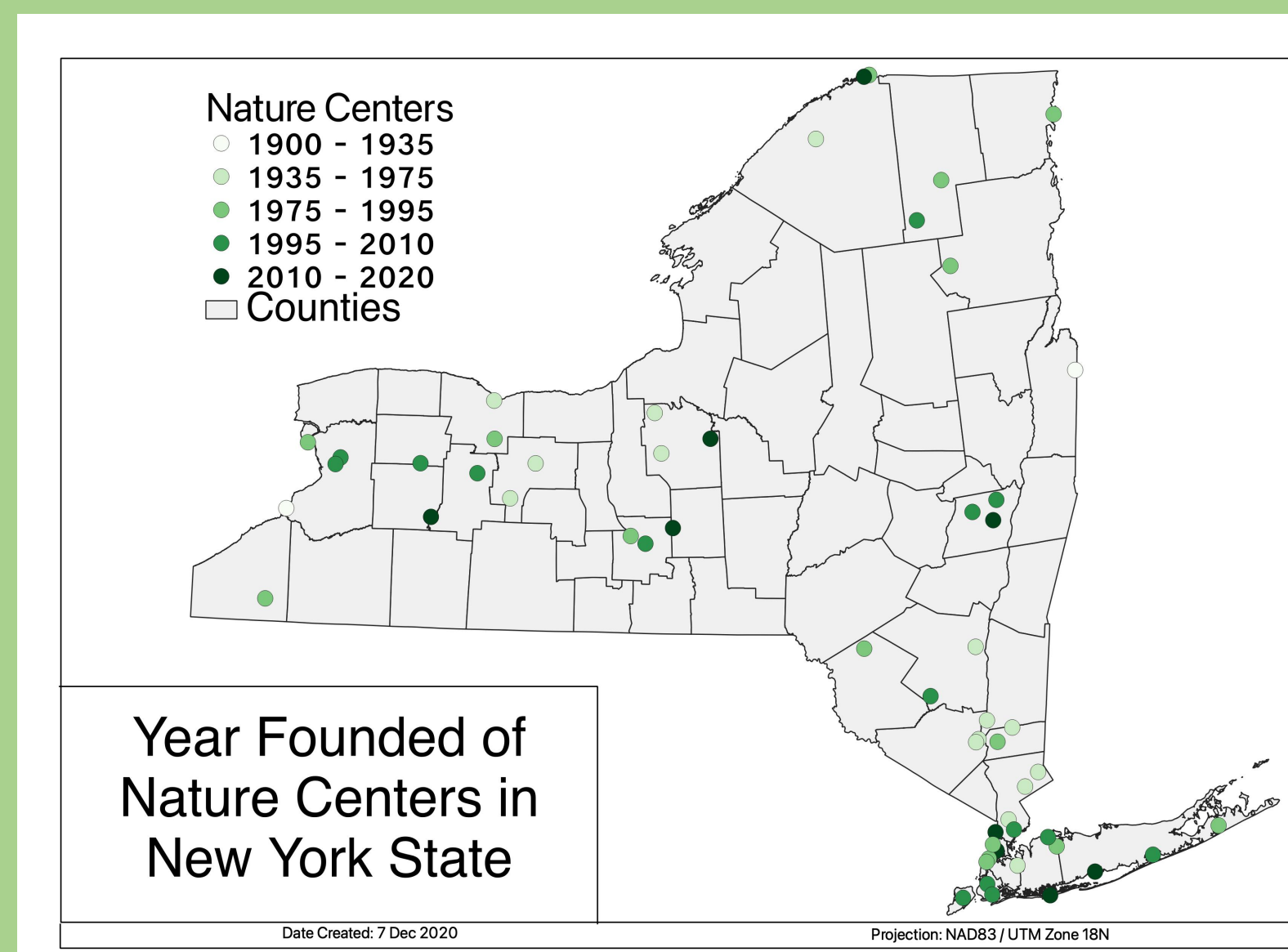


Figure 2. Nature centers in New York State and the years in which they were founded.

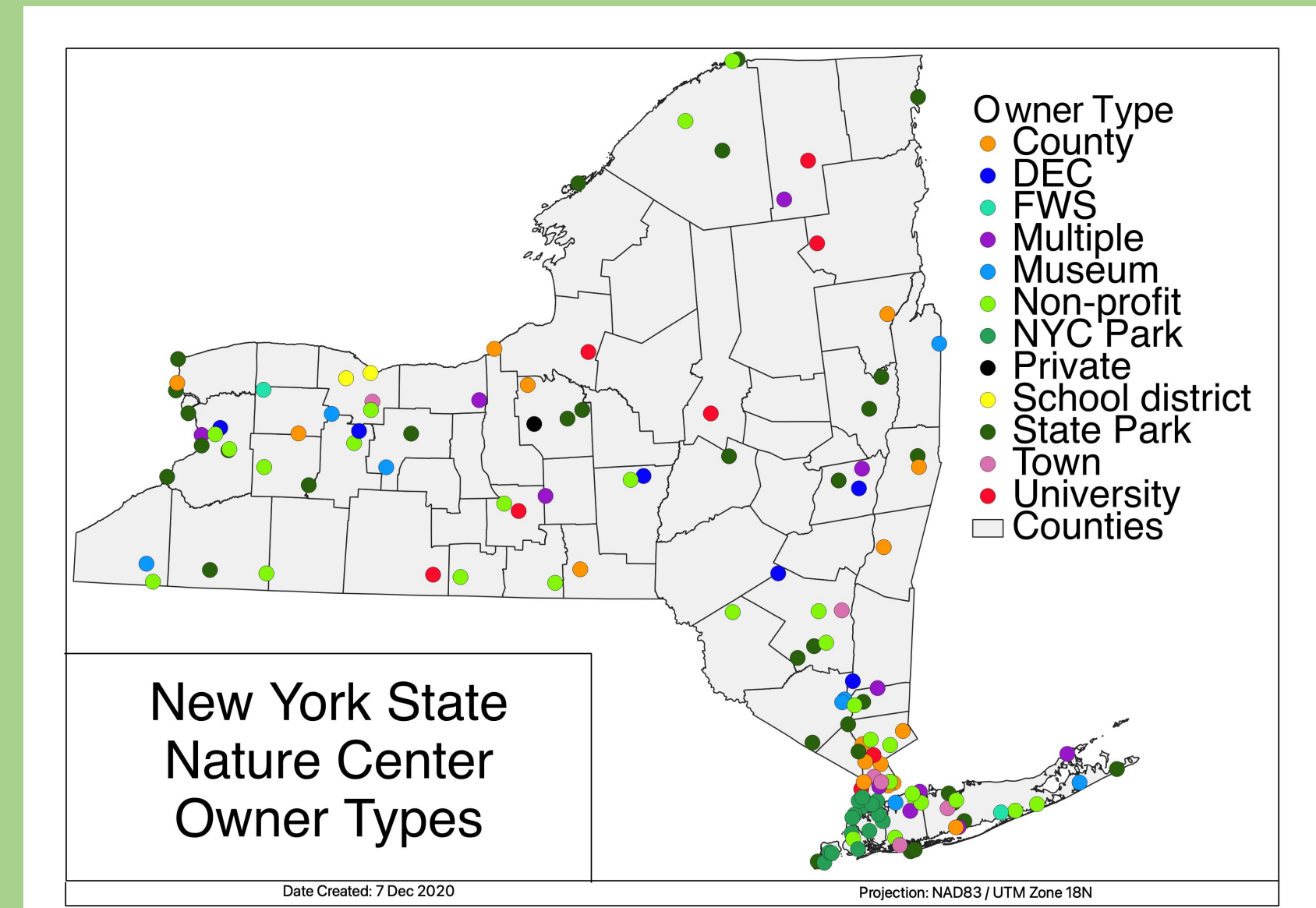


Figure 3. Nature centers in New York State categorized by their owner types. Figure

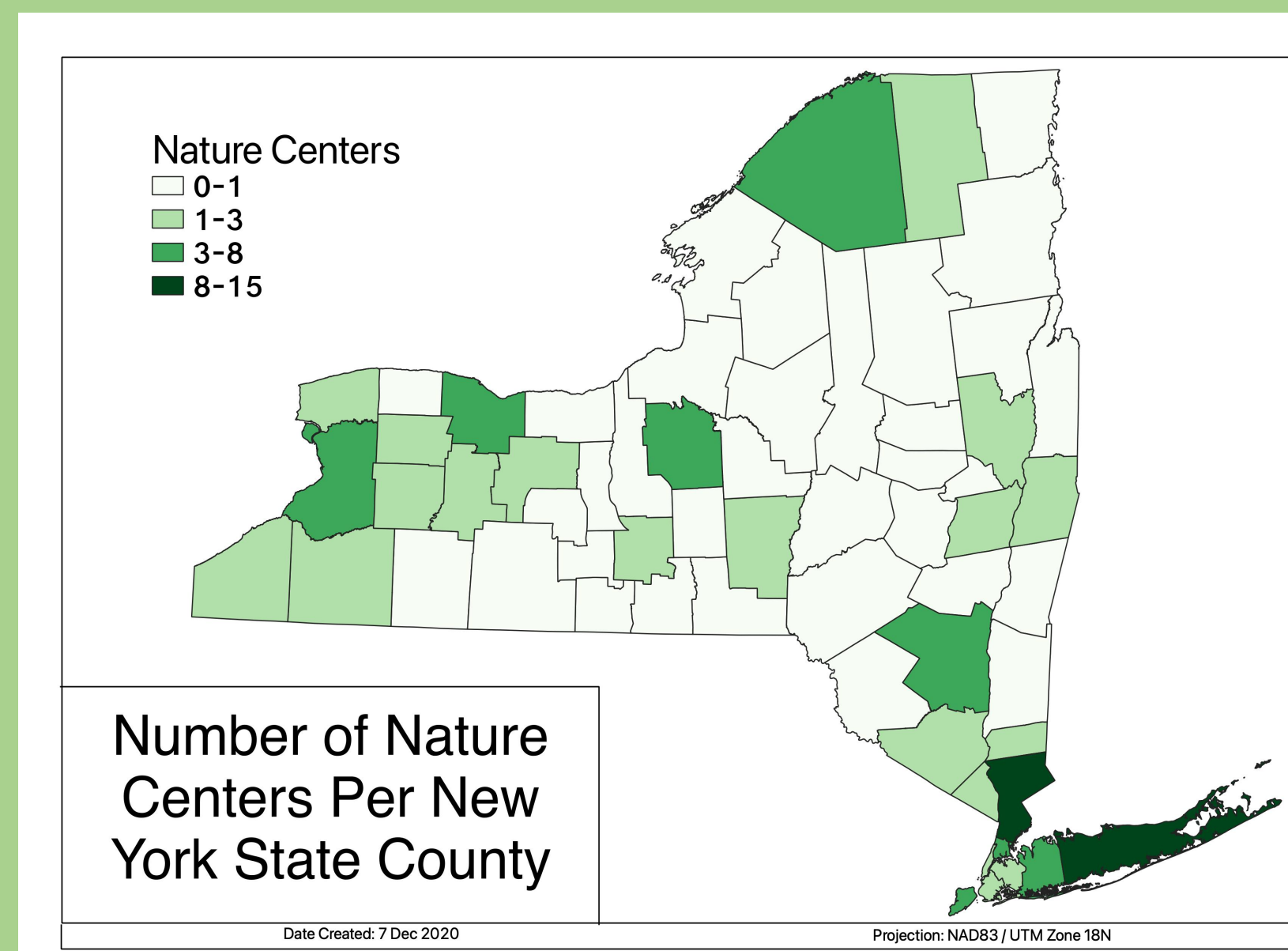


Figure 4. The number of nature centers in New York State counties.

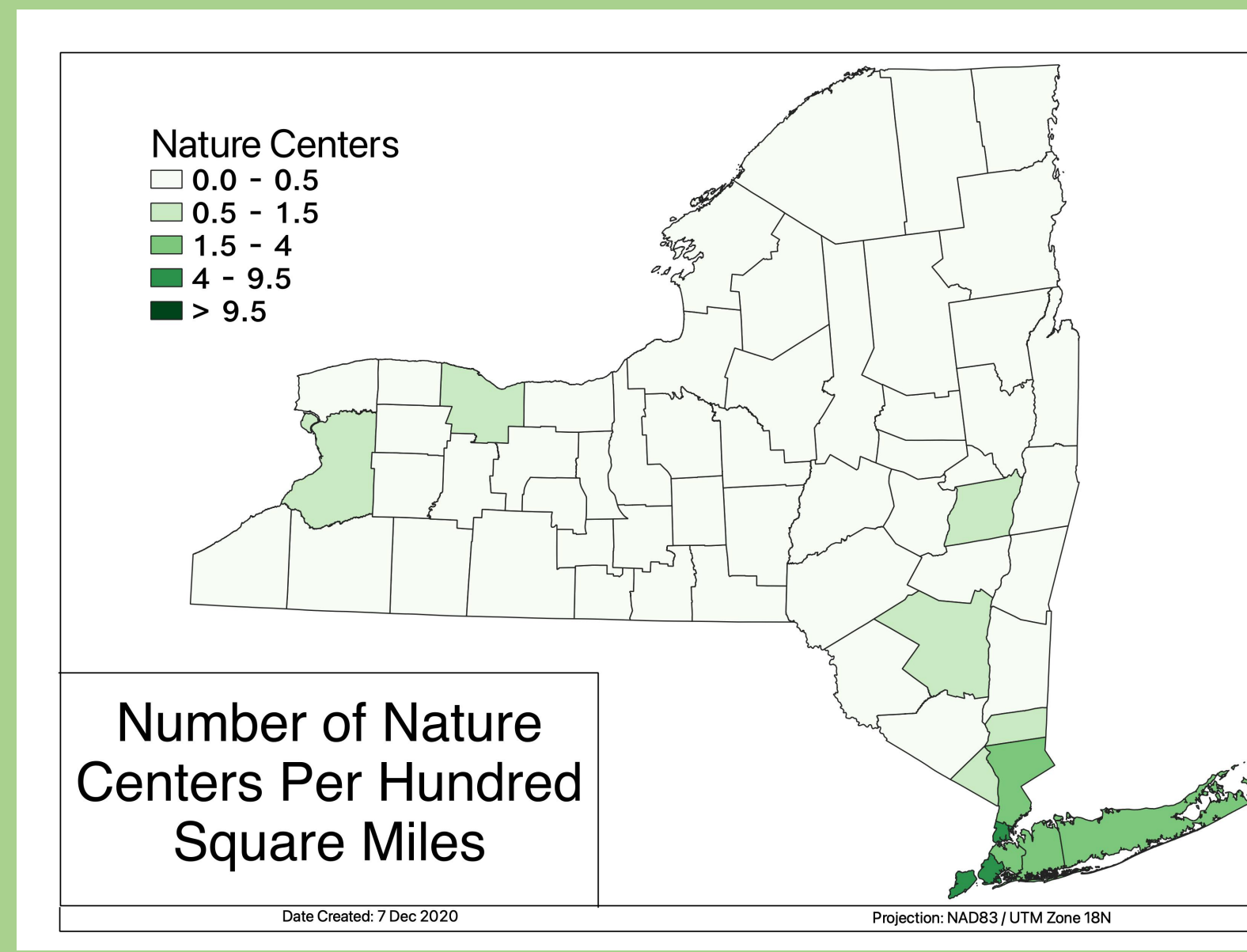


Figure 5. The number of nature centers per hundred square miles of area in New York State counties.

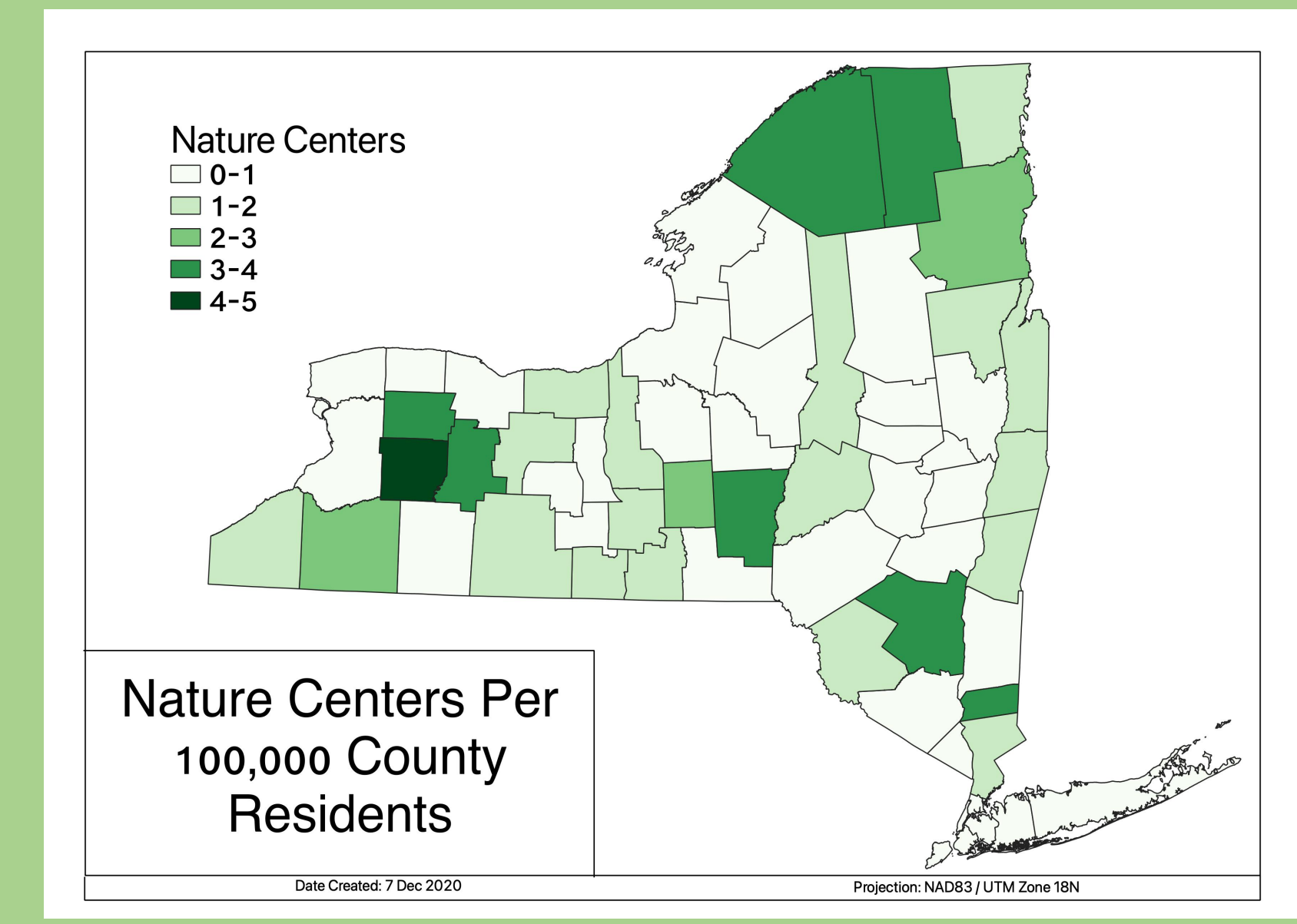


Figure 6. The number of nature centers per unit of population in New York State counties.

Number of Nature Centers Founded in New York State Each Decade

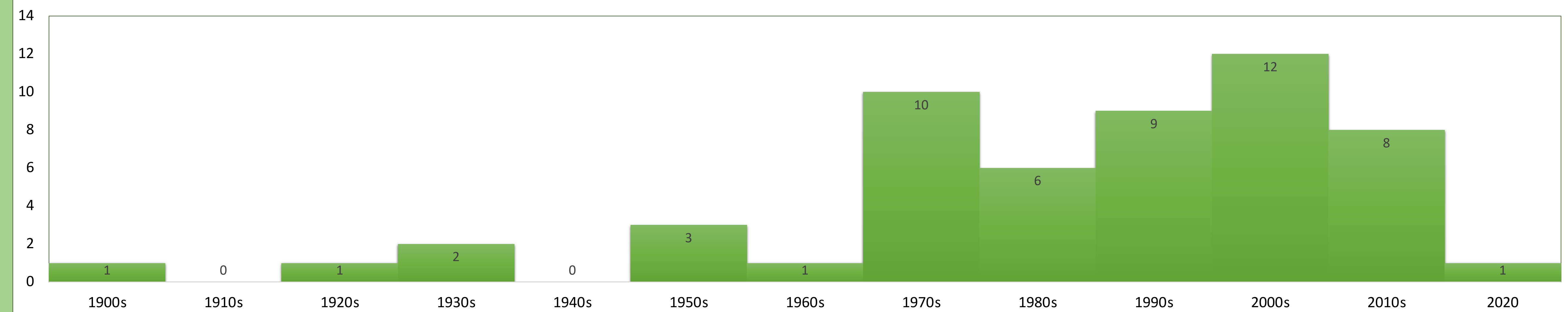


Figure 7. The number of nature centers founded each decade in New York State



Figure 8. Children pictured learning about aquatic animals at a nature center. (Tupper Lake, 2020)



Figure 9. People are gathered at a nature center building in a park. (New York State Governor Andrew M. Cuomo, 2015)

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GIS Data

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